**Key Learning Theories**

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| **Learning Theory** | **Description** | **Why is it Useful?** |
| **Cognitive Apprenticeship** | States that people learn best from one another through observation, imitation and modelling. | This is very useful in math because a lot of the material covered might be hard to grasp on your own. One of the greatest parts of working in a classroom setting though, is that you have such a vast set of resources all around you, and they are your peers. With guidance and help from someone who has a better understanding of the material, you can strengthen your own understanding as well. You can observe and learn from what someone else is doing, allowing you to compare and contrast your work to figure out where you may be going wrong. Then you can model what you’re doing after what you have just successfully learned from someone else. |
| **Communities of Practice** | Learning occurs when a group of individuals who share the same passion or interest interact amongst one another. | This is useful in math, not so much for the students that like math and want to learn more, but for those who aren’t too fond of it. Creating a math help room that’s run in school by a like-minded group of students that enjoy math, can benefit everyone. It allows students that need help find a place where they can get assistance and the students that are helping out can practice and strengthen their math and explanation skills. In many cases students may be scared or nervous to approach their teacher for help and might feel more comfortable speaking to their friend about the matter. Also, if there are a great number of students with questions, it could be difficult for the teacher to work with each individual student and give them all the attention that they need. With a math help room you have a number of “teachers” that are at the call of these students that need some further help. I’ve partaken in something like this during one my placements and found that it usually attracted many students, and worked successfully while I was there. |
| **Problem Based Learning** | A hands on form of learning, that allows for active investigation and solutions of real world problems. | This is useful in math because it makes the subject relatable to the real world. This could be through projects that involve monthly budgeting or financing, or using the proper equations to calculate something in an area of interest (ex. building a structure). Whatever the case may be it allows for a realistic problem to be solved through the use of your knowledge. I found that this idea of hands on learning with something that that related to the students really benefitted the kids that weren’t the biggest fans of the subject. In my last placement I worked with a Grade 12 College and Workplace class and we covered the topic of annuities, mortgages and budgeting. It was easier for me to relate this to them since most of them worked and were intrigued with the idea of managing their money. In turn they were much more compelled to learn this in comparison to exponential functions, which they weren’t really able to connect with. |
| **Elaboration Theory** | Instruction is designed in such a way that organizes material and ideas from simple to increasingly complex order. | This is probably one of the most vital ways to teach math in my opinion. Math is difficult for many people to understand in general, and if information is given out that hasn’t been fully explained or broken down, it’s going to be much harder to grasp. By working step-by-step, with a gradual progression from simple information to more complex steps, it allows the students to build their knowledge based on what they already know and understand. The questions of why and how they’re doing more complex tasks are answered. |